**IN THE CLAIMS**

Please amend the claims as indicated in the following listing of claims, which replaces all prior listings of claims.

1. (Currently Amended) ~~Materials for~~ A cathode that accelerates absorption of oxygen molecules and diffusion of oxygen ions in a solid oxide fuel ~~cells(SOFCs)~~ cell (SOFC), comprising:

an oxide having oxygen vacancies and high conductivity ~~as cathode, wherein cathode accelerating absorption of oxygen molecule and diffusion of oxygen ion; said materials having general form as~~ and having a formula:

$$Ln_{1-x}A_xCu_{1-y}B_yO_{2.5\pm\delta},$$

wherein Ln is a lanthanide ion, A is an alkaline-earth metal, B is a metal selected from the group consisting of cobalt~~(Co)~~, iron~~(Fe)~~, nickel~~(Ni)~~, zinc~~(Zn)~~, manganese~~(Mn)~~, aluminum~~(Al)~~, vanadium~~(V)~~, iridium~~(Ir)~~, molybdenum~~(Mo)~~, palladium~~(Pd)~~, platinum~~(Pt)~~, magnesium~~(Mg)~~, ruthenium~~(Ru)~~, rhodium~~(Rh)~~, chromium~~(Cr)~~ and zirconium~~(Zr)~~, X is greater than or equal to 0 and less than or equal to 1, Y is greater than ~~or equal to~~ 0 and less than 0.99, δ is greater than or equal to 0 and less than or equal to 0.5; and

the cathode is doped on an anode side ~~doping of A side~~ by an alkaline-earth ~~metals,~~ metal, and has~~converting partly~~ copper~~(Cu)~~ partly converted to a trivalence copper ion~~, forming~~ to form perovskite having oxygen vacancies with a regular ~~regularity~~ sequence~~, utilizing catalytic accelerating cathode reaction of cathode electrode, compounding electron being conducted though external~~

~~circuit with converting oxygen to forming oxygen ion , obtaining anode and hydrogen reaction by diffusing oxygen ion to electrolyte~~.

2. (Currently Amended) The ~~materials~~ cathode according to claim 1, wherein ~~said materials comprise~~ the cathode comprises at least 1% copper~~(Cu)~~.

3. (Canceled)

4. (Canceled)

5. (Canceled)

6. (Currently Amended) The ~~materials~~ cathode according to claim 1, wherein ~~said $Ln_{1-x}A_xCu_{1-y}B_yO_{2.5\pm\delta}$ is for said cathode in solid oxide fuel cells(SOFCs) operating~~ the cathode operates at a temperature in a range of [400-800] 400 – 800 degrees Celsius.

7. (Canceled)

8. (Currently Amended) ~~Materials for~~ A cathode that accelerates absorption of oxygen molecules and diffusion of oxygen ions in a solid oxide fuel ~~cells(SOFCs)~~ cell (SOFC), comprising:

an oxide having oxygen vacancies and high conductivity ~~as cathode~~, ~~wherein cathode accelerating absorption of oxygen molecule and diffusion of oxygen ion; said materials having general form as~~ and having a formula:

$$Ln_{1-x}A_xCu_{1-y}B_yO_{2.5\pm\delta},$$

wherein Ln is a lanthanide selected from the group consisting of lanthanum ~~(La)~~, cerium~~(Ce)~~, praseodymium~~(Pr)~~, neodymium~~(Nd)~~, promethium~~(Pm)~~, samarium~~(Sm)~~, europium~~(Eu)~~, gadolinium~~(Gd)~~, terbium~~(Tb)~~, dysprosium~~(Dy)~~, holmium~~(Ho)~~, erbium~~(Er)~~, thulium~~(Tm)~~, ytterbium~~(Yb)~~ and lutetium~~(Lu)~~, A is an alkaline-earth metal selected from the group consisting of beryllium~~(Be)~~, magnesium~~(Mg)~~, calcium~~(Ca)~~, strontium~~(Sr)~~, barium~~(Ba)~~ and radium~~(Ra)~~, B is a metal selected from the group consisting of cobalt~~(Co)~~, iron~~(Fe)~~, nickel~~(Ni)~~, zinc ~~(Zn)~~, manganese ~~(Mn)~~, aluminum~~(Al)~~, vanadium~~(V)~~, iridium~~(Ir)~~, molybdenum ~~(Mo)~~, palladium ~~(Pd)~~, platinum~~(Pt)~~, magnesium ~~(Mg)~~, ruthenium~~(Ru)~~, rhodium~~(Rh)~~, chromium~~(Cr)~~ and zirconium ~~(Zr)~~, X is greater than or equal to 0 and less than or equal to 1, Y is greater than ~~or equal to~~ 0 and less than 0.99, δ is greater than or equal to 0 and less than or equal to 0.5; and

the cathode is doped on an anode side ~~doping of A side~~ by an alkaline-earth ~~metals, converting~~ metal, and has ~~partly~~ copper~~(Cu)~~ partly converted to a trivalence copper ion~~,~~ to form ~~forming~~ perovskite having oxygen vacancies with ~~regularity~~ a regular sequence~~, utilizing catalytic accelerating cathode reaction of cathode electrode, compounding electron being conducted though external circuit with converting oxygen to forming oxygen ion , obtaining anode and hydrogen reaction by diffusing oxygen ion to electrolyte~~.

9. (Currently Amended) ~~Materials for~~ A cathode that accelerates absorption of oxygen molecules and diffusion of oxygen ions in a solid oxide fuel ~~cells(SOFCs)~~ cell (SOFC) having ~~the general form~~ a formula $ABO_{2.5\pm\delta}$, comprising:

an oxide having oxygen vacancies and high conductivity ~~as cathode, wherein cathode accelerating absorption of oxygen molecule and diffusion of oxygen ion; said materials having general form as~~ and having a formula:

$$Ln_{1-x}A_xCu_{1-y}B_yO_{2.5\pm\delta},$$

wherein Ln is a lanthanide ion, A is an alkaline-earth metal, B is a metal selected from the group consisting of cobalt~~(Co)~~, iron~~(Fe)~~, nickel~~(Ni)~~, zinc~~(Zn)~~, manganese~~(Mn)~~, aluminum~~(Al)~~, vanadium~~(V)~~, iridium~~(Ir)~~, molybdenum~~(Mo)~~, palladium~~(Pd)~~, platinum~~(Pt)~~, magnesium~~(Mg)~~, ruthenium~~(Ru)~~, rhodium~~(Rh)~~, chromium~~(Cr)~~ and zirconium~~(Zr)~~, X is greater than or equal to 0 and less than or equal to 1, Y is greater than ~~or equal to~~ 0 and less than 0.99, δ is greater than or equal to 0 and less than or equal to 0.5; and

the cathode is doped on an anode side ~~doping of A-side~~ by an alkaline-earth ~~metals,~~ metal; and has ~~converting partly~~ copper~~(Cu)~~ partly converted to a trivalence copper ion~~, forming~~ to form perovskite having oxygen vacancies with a regular ~~regularity~~ sequence~~, utilizing catalytic accelerating cathode reaction of cathode electrode, compounding electron being conducted though external circuit with converting oxygen to forming oxygen ion , obtaining anode and hydrogen reaction by diffusing oxygen ion to electrolyte~~.